CLAIMS

We claim:

1. An electric motor, which comprises:

a drive wheel;

a structure to which said drive wheel is rotatably attached;

one or more permanent magnets attached to said drive wheel with opposite magnetic poles adjacent to one another;

one or more electromagnets attached to said structure and arranged generally in a plane that is substantially parallel to, but not within, the plane or planes containing said permanent magnets, said electromagnets being sufficiently close to said permanent magnets that the magnetic fields of said electromagnets and said permanent magnets will interact with one another;

a sensor that determines the location of said permanent magnets;

a switch for activating said electromagnets by connecting said electromagnets to a source of electrical power; and

a computer, said computer being capable of receiving input of the desired speed of rotation for said drive wheel, said computer being in communication with said sensor so that said computer is informed by said sensor about the location of said permanent magnets, said computer also being in communication with said switch in order to close said switch, said computer being capable of being programmed to produce a signal to close said switch periodically from the time a pole of one of said permanent magnets has approached said sensor until the opposite pole of said permanent magnet approaches said sensor, and said computer producing such a periodic signal to close said switch that the total period said switch is closed will create an average voltage that produces the desired speed of rotation for said drive wheel.

2. The electric motor as recited in claim 1, wherein:

said computer has been further programmed to have the capability to invert the signal it sends to said switch.

3. The electric motor as recited in claim 2, further comprising:

a magnetic pump containing a magnet, which magnetic pump is operated by interaction between said permanent magnets and the magnet in said magnetic pump;

a radiating heat sink; and

a passage for transporting a cooling fluid from said magnetic pump, past said electromagnets, to said radiating heat sink, and back to said magnetic pump.

4. The electric motor as recited in claim 2, further comprising:

a module encapsulating one or more of said electromagnets, having a radiating surface, and containing a cavity that communicates with both said electromagnets and the radiating surface so that a heat-transfer medium can be placed into such cavity, said module being removably insertable into said structure.

5. The electric motor as recited in claim 2, wherein:

said structure contains a cavity that communicates with said electromagnets and can contain either a heat-transfer medium or a heat-absorbing medium.

6. The electric motor as recited in claim 5, further comprising:

at least one radiating surface, said radiating surface communicating with said cavity.

7. The electric motor as recited in claim 1, further comprising:

a module encapsulating one or more of said electromagnets, having a radiating surface, and containing a cavity that communicates with both said electromagnets and the radiating surface so that a heat-transfer medium can be placed into such cavity, said module being removably insertable into said structure.

8. The electric motor as recited in claim 1, wherein:

said structure contains a cavity that communicates with said electromagnets and can contain either a heat-transfer medium or a heat-absorbing medium.

9. The electric motor as recited in claim 8, further comprising:

at least one radiating surface, said radiating surface communicating with said cavity.

10. The electric motor as recited in claim 1, further comprising:

a magnetic pump containing a magnet, which magnetic pump is operated by interaction between said permanent magnets and the magnet in said magnetic pump;

a radiating heat sink; and

a passage for transporting a cooling fluid from said magnetic pump, past said electromagnets, to said radiating heat sink, and back to said magnetic pump.

11. An electric motor, which comprises:

a drive wheel;

a structure to which said drive wheel is rotatably attached;

one or more permanent magnets attached to said drive wheel with opposite magnetic poles adjacent to one another;

one or more electromagnets attached to said structure and arranged generally in a plane that is substantially parallel to, but not within, the plane or planes containing said permanent magnets, said electromagnets being sufficiently close to said permanent magnets that the magnetic fields of said electromagnets and said permanent magnets will interact with one another;

a sensor that produces a current only so long as a pole, having a given polarity, of one of said permanent magnets is near said sensor;

a switch for activating said electromagnets by connecting said electromagnets to a source of electrical power; and

a timing circuit, said timing circuit being in communication with said sensor, said timing circuit also being in communication with said switch in order to close said switch, said timing circuit producing a periodic signal to close said switch only while said sensor produces a current, and said timing circuit producing a periodic signal to close such switch wherein the total period said switch is closed is fixed by the value of an electronic component within said timing circuit.

12. The electric motor as recited in claim 11, further comprising:

an inverter, said inverter being electronically inserted by a user between said sensor and said timing circuit, for causing an inversion of any electronic signal that is sent from said sensor to said timing circuit.

13. The electric motor as recited in claim 12, further comprising:

a magnetic pump containing a magnet, which magnetic pump is operated by interaction between said permanent magnets and the magnet in said magnetic pump;

a radiating heat sink; and

a passage for transporting a cooling fluid from said magnetic pump, past said electromagnets, to said radiating heat sink, and back to said magnetic pump.

14. The electric motor as recited in claim 12, further comprising:

a module encapsulating one or more of said electromagnets, having a radiating surface, and containing a cavity that communicates with both said electromagnets and the radiating surface so that a heat-transfer medium can be placed into such cavity, said module being removably insertable into said structure.

15. The electric motor as recited in claim 12, wherein:

said structure contains a cavity that communicates with said electromagnets and can contain either a heat-transfer medium or a heat-absorbing medium.

16. The electric motor as recited in claim 15, further comprising:

at least one radiating surface, said radiating surface communicating with said cavity.

17. The electric motor as recited in claim 11, further comprising:

a module encapsulating one or more of said electromagnets, having a radiating surface, and containing a cavity that communicates with both said electromagnets and the radiating surface so that a heat-transfer medium can be placed into such cavity, said module being removably insertable into said structure.

18. The electric motor as recited in claim 11, wherein:

said structure contains a cavity that communicates with said electromagnets and can contain either a heat-transfer medium or a heat-absorbing medium.

19. The electric motor as recited in claim 1~~6~~7, wherein:

at least one radiating surface, said radiating surface communicating with said cavity.

20. The electric motor as recited in claim 11, further comprising:

a magnetic pump containing a magnet, which magnetic pump is operated by interaction between said permanent magnets and the magnet in said magnetic pump;

a radiating heat sink; and

a passage for transporting a cooling fluid from said magnetic pump, past said electromagnets, to said radiating heat sink, and back to said magnetic pump.

21. An electric motor, which comprises:

a drive wheel;

a structure to which said drive wheel is rotatably attached;

one or more permanent magnets attached to said drive wheel with opposite magnetic poles adjacent to one another;

one or more electromagnets attached to said structure and arranged generally in a plane that is substantially parallel to , but not within the plane or planes containing said permanent magnets, said electromagnets being sufficiently close to said permanent magnets that the magnetic fields of said electromagnets and said permanent magnets will interact with one another;

a sensor that produces a voltage only so long as a pole, having a given polarity, of one of said permanent magnets is near said sensor; and

a switch for activating said electromagnets by connecting said electromagnets to a source of electrical power, said switch being in communication with said sensor and said switch being closed when and only when said switch receives voltage from said sensor.

22. The electric motor as recited in claim 21, further comprising:

an inverter, said inverter being electronically inserted by a user between said sensor and said switch, for causing an inversion of any electronic signal that is sent from said sensor to said switch.

23. The electric motor as recited in claim 22, further comprising:

a magnetic pump containing a magnet, which magnetic pump is operated by interaction between said permanent magnets and the magnet in said magnetic pump;

a radiating heat sink; and

a passage for transporting a cooling fluid from said magnetic pump, past said electromagnets, to said radiating heat sink, and back to said magnetic pump.

24. The electric motor as recited in claim 22, further comprising:

a module encapsulating one or more of said electromagnets, having a radiating surface, and containing a cavity that communicates with both said electromagnets and the radiating surface so that a heat-transfer medium can be placed into such cavity, said module being removably insertable into said structure.

25. The electric motor as recited in claim 22, wherein:

said structure contains a cavity that communicates with said electromagnets and can contain either a heat-transfer medium or a heat-absorbing medium.

26. The electric motor as recited in claim 25, further comprising:

at least one radiating surface, said radiating surface communicating with said cavity.

27. The electric motor as recited in claim 21, further comprising:

a module encapsulating one or more of said electromagnets, having a radiating surface, and containing a cavity that communicates with both said electromagnets and the radiating surface so that a heat-transfer medium can be placed into such cavity, said module being removably insertable into said structure.

28. The electric motor as recited in claim 21, wherein:

said structure contains a cavity that communicates with said electromagnets and can contain either a heat-transfer medium or a heat-absorbing medium.

29. The electric motor as recited in claim 28, further comprising:

at least one radiating surface, said radiating surface communicating with said cavity.

30. The electric motor as recited in claim 21, further comprising:

a magnetic pump containing a magnet, which magnetic pump is operated by interaction between said permanent magnets and the magnet in said magnetic pump;

a radiating heat sink; and

a passage for transporting a cooling fluid from said magnetic pump, past said electromagnets, to said radiating heat sink, and back to said magnetic pump.

31. A process for electrically powering a drive wheel, which comprises:

rotatably attaching a drive wheel to a structure;

attaching to said, drive wheel one or more permanent magnets with opposite magnetic poles adjacent to one another;

attaching to said structure one or more electromagnets arranged generally in a plane that is substantially parallel to , but not within, the plane or planes containing said permanent magnets, said electromagnets being sufficiently close to said permanent magnets that the magnetic fields of said electromagnets and said permanent magnets will interact with one another;

determining the location of said permanent magnets with a sensor;

connecting a switch for activating said electromagnets between said electromagnets and a source of electrical power;

inputting to a computer the desired speed of rotation for said drive wheel;

having said sensor inform said computer about the location of said permanent magnets;

connecting said computer to said switch;

programming said computer to produce a signal to close said switch periodically from the time a pole of one of said permanent magnets has approached said sensor until the opposite pole of said permanent magnet approaches said sensor; and

producing with said computer such a periodic signal to close said switch so that the total period said switch is closed will create an average voltage that produces the desired speed of rotation for said drive wheel.

32. A process for electrically powering a drive wheel, which comprises:

rotatably attaching a drive wheel to a structure;

attaching to said drive wheel one or more permanent magnets with opposite magnetic poles adjacent to one another;

attaching to said structure one or more electromagnets arranged generally in a plane that is substantially parallel to, but not within, the plane or planes containing said permanent magnets, said electromagnets being sufficiently close to said permanent magnets that the magnetic fields of said electromagnets and said permanent magnets will interact with one another;

producing a current with as sensor that creates such current only so long as a pole, having a given polarity, of one of said permanent magnets is near said sensor;

connecting a switch for activating said electromagnets between said electromagnets and a source of electrical power;

connecting said sensor to said timing circuit;

connecting said timing circuit to said switch; and

producing with said timing circuit a periodic signal to close said switch only while said sensor produces a current, wherein the total period for which said periodic signal closes said switch is fixed by the value of an electronic component within said timing circuit.

33. A process for electrically powering a drive wheel, which comprises:

rotatably attaching a drive wheel to a structure;

attaching to said drive wheel one or more permanent magnets with opposite magnetic poles adjacent to one another;

attaching to said structure one or more electromagnets arranged generally in a plane that is substantially parallel to, but not within, the plane or planes containing said permanent magnets, said electromagnets being sufficiently close to said permanent magnets that the magnetic fields of said electromagnets and said permanent magnets will interact with one another;

producing a voltage with as sensor that creates such voltage only so long as a pole, having a given polarity, of one of said permanent magnets is near said sensor;

connecting a switch between said electromagnets and a source of electrical power; and

connecting said sensor to said switch so that said switch closes when and only when said switch receives voltage from said sensor.